CLAIMS:

1. Method of reconstructing an image from measured line-integrals of an object, the method comprising the steps of: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; up-dating the intermediate image on the basis of the difference.

2. Method according to claim 1, wherein the intermediate image is up-dated on the basis of a back-projection performed by using the motion field that belongs to the selected temporal bin.

3. Method according to claim 1, wherein the plurality of motion fields contains information with respect to a location shift and a local deformation of basis functions of the intermediate image with regard to the measured line-integrals.

4. Method according to claim 1, wherein the steps of claim 1 are iteratively performed until an end criterion has been fulfilled.

5. Method according to claim 1, wherein the plurality of motion fields describes at least one of a motion and deformation of the object with respect to a reference grid of the intermediate image.

6. Method according to claim 1, wherein the plurality of motion fields is

determined from a set of images where each image is reconstructed using data from one temporal bin of the plurality of temporal bins only;

7. Image processing device for reconstructing an image from measured line-integrals, comprising: a storage for storing the positron emission data; and an image processor for reconstructing the image from the measured line-integrals; wherein the image processor is adapted to perform the following operation: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; and up-dating the intermediate image on the basis of the difference.

8. Positron emission tomography system, wherein the positron emission tomography system includes a storage for storing measured line-integrals and an image processor, wherein the image processor is arranged to perform the following operation: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; up-dating the intermediate image on the basis of the difference.

9. Computer program product comprising computer program means to cause a processor to execute the following steps when the computer program means are executed on the processor: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the

plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; up-dating the intermediate image on the basis of the difference.